UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,115	05/31/2000	Jueng Gil Lee	CDST-C130-1P	7774

7590 03/14/2002

Wagner Murabito & Hao LLP
Two North Market Street
Third Floor
San Jose, CA 95113

EXAMINER
ROY, SIKHA

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 03/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/588,115	LEE ET AL.	
	Examiner	Art Unit	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-24 and 47-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-19 and 25-46* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4,6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 20-24 and 47-54 drawn to, multiplayer electrode structure classified in class 313, subclass 495.

II. Claims 1-19, 25-46 drawn to method for forming electrode structure, classified in class 445, subclass 50.

Inventions of Group I and Group II are related as product and process of making it. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process. For example, the product as claimed, can be made as follows: forming the electrode structure by depositing a barrier layer above the metal alloy layer and then forming the protective layer on the barrier layer as suggested in claim 25.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. John Wagner on 03/01/02 a provisional election was made without traverse to prosecute the invention of group I, claims 20-24,

and 47-54. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-19 and 25-46 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 20,21 and 23 are provisionally rejected under the judicially created doctrine of double patenting over claims 1 and 9,5,10 of copending Application No. 09/421,781. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application 09/588,115 is fully disclosed in the referenced copending application 09/421,781 and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

U S Application No. 09/588,115	U S Application No. 09/421,781	Reasons for rejection under double patenting
Claim 20	Claims 1 and 9	Same subject matter. Both applications claim electrode structure made of metal alloy layer and protective (cladding) layer. The process of etching the multi-layer stack forming the electrode is not afforded patentable weight as it shows no difference between the two products of multi-layer electrode.
Claim 21	Claims 1,9 and 5	Same subject matter. Aluminum alloy comprises aluminum and neodymium.
Claim 23	Claims 1,9 and 10	Same subject matter. Protective (cladding) layer comprises molybdenum and tungsten.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 20- 24 and 47-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,894,188 to Chakvorty et al. in view of EP 731507 A1 to Takayama.

Regarding claim 20, Chakvorty et al. disclose (column 3 lines 6-15, column 5 lines40-62, Fig. 1C)) an electrode (cathodic) structure for a flat panel display comprising a metallic layer (aluminum strip) 103 over which a protective layer (cladding layer)104 is deposited. Mask and etch steps are performed to form the electrode (column 6 lines 8,9 step 213, Fig 2).

Claim 20 differs from Chakvorty et al. in that Chakvorty et al. do not exemplify on metal alloy layer in the structure of multilayer electrode.

Takayama in analogous art of electrode materials disclose (page 2 line 38, page 3, lines 1-20) aluminum-based alloy electrode material. It is noted that the material substantially comprises Al and at least one element selected from a group consisting of rare-earth elements. The electrode material thus constructed has high thermal stability, low electrical resistance and fewer occurrences of defects such as hillocks.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the metal layer of the electrode structure of Chakvorty et al. by the metal alloy layer as taught by Takayama for high thermal stability, low electrical resistance and fewer occurrences of defects such as hillocks in the multi-layer electrode.

Regarding claim 21, Takayama discloses (page 5 lines 31,32) Al alloy produced by mixing Nd (neodymium) with aluminum.

Regarding claim 23, Chakvorty et al. disclose (column 8 lines 19-26) that the refractory metals molybdenum and tungsten which are easy to process, do not interdiffuse with aluminum and make good electrical contact with aluminum conductors and the overlying layers are used as protective (cladding) layer.

Regarding claims 22 and 24 Chakvorty et a. and Takayama disclose the claimed invention except for the limitations of thickness of the metal alloy layer and the protective layer to be approximately 2500°A and 1200°A respectively. Takayama discloses (page 4 line47) Al alloy thin layer together with anodically oxidized film having a thickness of 4000°A or less. The total thickness of the multi-layer electrode as claimed in 22 and 24 is approximately 3700°A. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have been obvious to one of ordinary skills in the art at the time the invention was made to provide the values of the thickness of the metal alloy layer and protective layer, since discovering an optimum value of a result variable is considered within the skills of the art.

Referring to claim 47, Chakvorty et al. in view of Takayama disclose electrode structure for a flat panel display, the electrode comprising Al-based alloy layer, barrier layer of anodically oxidizing film deposited on the metal alloy layer and a protective (cladding) layer deposited on the anodically oxidized metal alloy layer formed by mask and etch steps.

Claim 48 essentially recites the same limitation as of claim 21 and hence is rejected for the same reason.

Regarding claim 50, Takayama disclose (page 4 lines 35,36) a barrier layer formed by anodically oxidizing the metal-alloy conductor line. It is noted that the anodiclally oxidized conductor has high dielectric strength and excellent insulating characteristic.

Claim 52 essentially recites the same limitation as of claim 23 and hence is rejected for the same reason.

Regarding claims 49,51 and 53 Chakvorty et a. and Takayama disclose the claimed invention except for the limitations of thickness of the metal alloy layer, barrier layer and the protective layer to be approximately 2500°A, 100°A and 1200°A respectively. Takayama discloses (page 4 line47) Al alloy thin layer together with anodically oxidized film having a thickness of 4000°A or less. The total thickness of the multi-layer electrode as claimed in 49,51 and 53 is approximately 3800°A. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). Thus, it would have

been obvious to one of ordinary skills in the art at the time the invention was made to provide the values of the thickness of the metal alloy layer and protective layer, since discovering an optimum value of a result variable is considered within the skills of the art.

Regarding claim 54, the Examiner notes that the claim limitation that "the multi-layer electrode is etched using a wet etchant with volume percentages of constituents of approximately 70-80 percent H_3PO_4;approximately 10-15 percent HNO_3;approximately 7-12 percent CH_3COOH and approximately 2-8 percent H_2O to form desired sloped profile " is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the multi-layer electrode disclosed by Chakvorty et al. and Takayama is at least a fully functional equivalent to the Applicant's claimed multi layer electrode as evidenced by claim 54.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U. S. Patent 6,320,138 to Kamiya discloses conductor formed of aluminum alloy. U. S. Patent 4,348,886 to Faith discloses method of formation of oxide films.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879

NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800